



Content on this page was developed during the 2009-2010 H1N1 pandemic and has not been updated.

- The H1N1 virus that caused that pandemic is now a regular human flu virus and continues to circulate seasonally worldwide.
- The English language content on this website is being archived for *historic and reference purposes only*.
- For current, updated information on seasonal flu, including information about H1N1, see the [CDC Seasonal Flu website \(http://www.cdc.gov/flu/\)](http://www.cdc.gov/flu/).

## Deaths Related to 2009 H1N1 Influenza Among American Indian/Alaska Natives (AI/ANs) – 12 States, 2009

December 18, 2009 11:30 AM ET

### (a) Which states participated in this investigation?

Twelve states participated in this investigation ([#\\_ftn1](#)): AK, AL, AZ, MI, ND, NM, OK, OR, SD, UT, WA, WY. In addition to these states, the investigation workgroup included the Council of State and Territorial Epidemiologists, 5 Tribal Epidemiology Centers (TEC) (Arizona, California, Northwest Portland Area [OR, ID, WA], Oklahoma, and the TEC representing all southern/eastern states), the Indian Health Service, and CDC.

### (b) What were the key findings?

Of the 426 deaths attributable to 2009 H1N1 virus infection, forty-two (9.9%) occurred among AI/ANs; AI/ANs make up approximately 3% of the total population in these 12 states. When age-adjusted rates per 100,000 population were compared, the 2009 H1N1 influenza death rate in AI/ANs in these states was 4 times the 2009 H1N1 influenza death rate in all other races combined

### (c) Was the increased risk of death observed in all age groups?

Yes, in all age groups, AI/ANs had a 2009 H1N1 influenza death rate that was higher than the 2009 H1N1 influenza death rate in other populations in these 12 states.

### (d) Which AI/AN age group had the highest death rate?

AI/ANs aged ≥65 years had the highest age-specific death rate at 7.2 per 100,000 population.

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### (e) What were the death rates in other racial/ethnic categories?

The age-adjusted death rates per 100,000 population for each racial/ethnic category were as follows:

• AI/ANs: 3.7	• Whites: 0.8
• Hispanics: 1.4	• Blacks: 0.7

<ul style="list-style-type: none"> <li>• Asian or Pacific Islanders: 1.1</li> </ul>	<ul style="list-style-type: none"> <li>• All non-AI/ANs combined: 0.9</li> </ul>
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## (f) Did AI/ANs in this investigation have co-existing medical conditions associated with more severe 2009 H1N1-related disease?

The proportion of AI/AN deaths falling into **any** high-risk category was 81.0% compared to 77.6% for all other racial and ethnic groups. The prevalence of asthma was 31.0% among AI/AN decedents versus 14.1% in the non-AI/AN racial/ethnic groups; the prevalence of diabetes was 45.2% among the AI/AN deaths versus 24.0% for the non-AI/AN racial and ethnic groups.

## (g) Why were AI/AN populations at higher risk of death due to 2009 H1N1 influenza?

1. The factors that place AI/AN populations at higher risk for influenza-related deaths are unknown, but may include higher rates of underlying chronic illness such as diabetes. The age-specific prevalence of diabetes in AI/AN adults is two to three times higher than for U.S. adults in general.
2. Poverty and other social determinants of health may place AI/ANs at higher risk. The AI/AN poverty rate for households with children under 18 years of age is 30% —a rate that is twice the national rate and three times the rate for non-Hispanic whites. Poverty may result in living conditions that contribute to higher risk due to factors such as less-than-optimal sanitation (e.g. lack of running water) or household crowding.
3. Half of the AI/ANs in the U.S. live on reservations, many in very remote locations. Remoteness can be a barrier affecting access to both preventive services and acute clinical care.

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## (h) Is this the first time that this increased risk of death from 2009 H1N1 has been documented among AI/AN populations?

1. Increased risk of death from 2009 H1N1 has been reported to occur in indigenous populations in Australia, Canada, and New Zealand previously.
2. In the fall of 2009, two states (Arizona and New Mexico) observed a disproportionate number of 2009 H1N1-associated deaths among AI/ANs. In Arizona, where AI/ANs represent 4.9% of the state's total population, AI/ANs comprised 19% of all confirmed 2009 H1N1 deaths. In New Mexico, state officials observed that 20% of 2009 H1N1 deaths in the state were AI/ANs, who make up 9% of the state's total population.

## (i) Has an increased risk of death from influenza been documented among AI/ANs in past years?

1. Although data on the effects of the 1918 pandemic on AI/AN populations are limited, government reports from 1919 and 1920 found that the epidemic among American Indians was “extremely severe,” with mortality rates 4 times higher than that reported for larger cities in the United States during the pandemic.
2. Multiple investigations spanning the last 90 years have shown that AI/ANs are at increased risk of hospitalization and death from influenza and pneumonia. During the 1918-1919 influenza pandemic in the United States, government sources documented that AI/ANs were 4 times more likely to die from influenza than people living in urban areas. A 1980 investigation in New Mexico documented that AI/ANs were 2 to 3 times more likely to die from pneumonia and influenza than Whites. In 2009, an investigation comparing mortality data for the years 1999-2003 found that the

pneumonia and influenza death rate of Alaska Natives was 60% higher than the pneumonia and influenza death rate of Whites. Many other investigations have found the same or similar pattern over many decades. The question, however, of why AI/ANs are more likely to die from influenza and pneumonia has not been answered.

3. Mortality for pneumonia and influenza (P&I) in all age groups is twice as high for the AI/AN population compared to the rest of the U.S. population. Among AI/AN infants, P&I mortality is 4 times higher compared to the U.S. general population; among AI/ANs <24 years of age, rates are from 1.7 to 2.8 times as high; among AI/ANs 25 – 54 years of age, rates are 3.3 times higher. P&I mortality rates for those 55 and older are 1.7 times higher than the U.S. population.

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## (j) What actions should public health officials take in response to the findings in this report?

1. Increase awareness among AI/AN populations and their healthcare providers about the potential severity of influenza and about current recommendations regarding the timely use of antiviral medications, especially among persons known to be at [high risk](/h1n1flu/highrisk.htm) (e.g., children, the elderly, pregnant women, and anyone with certain chronic medical conditions such as asthma, diabetes, heart disease, kidney disease, or immunosuppression).
2. Efforts to promote the use of 2009 H1N1 influenza vaccine in AI/AN populations should be expanded.
3. Ensure that all state and federal mortality surveillance systems are capable of accurate and complete reporting of race/ethnicity.
4. Factors that might contribute to increased influenza-related mortality in the AI/AN population, including the impact of underlying chronic medical conditions and social determinants of health, should be topics for future investigation.

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